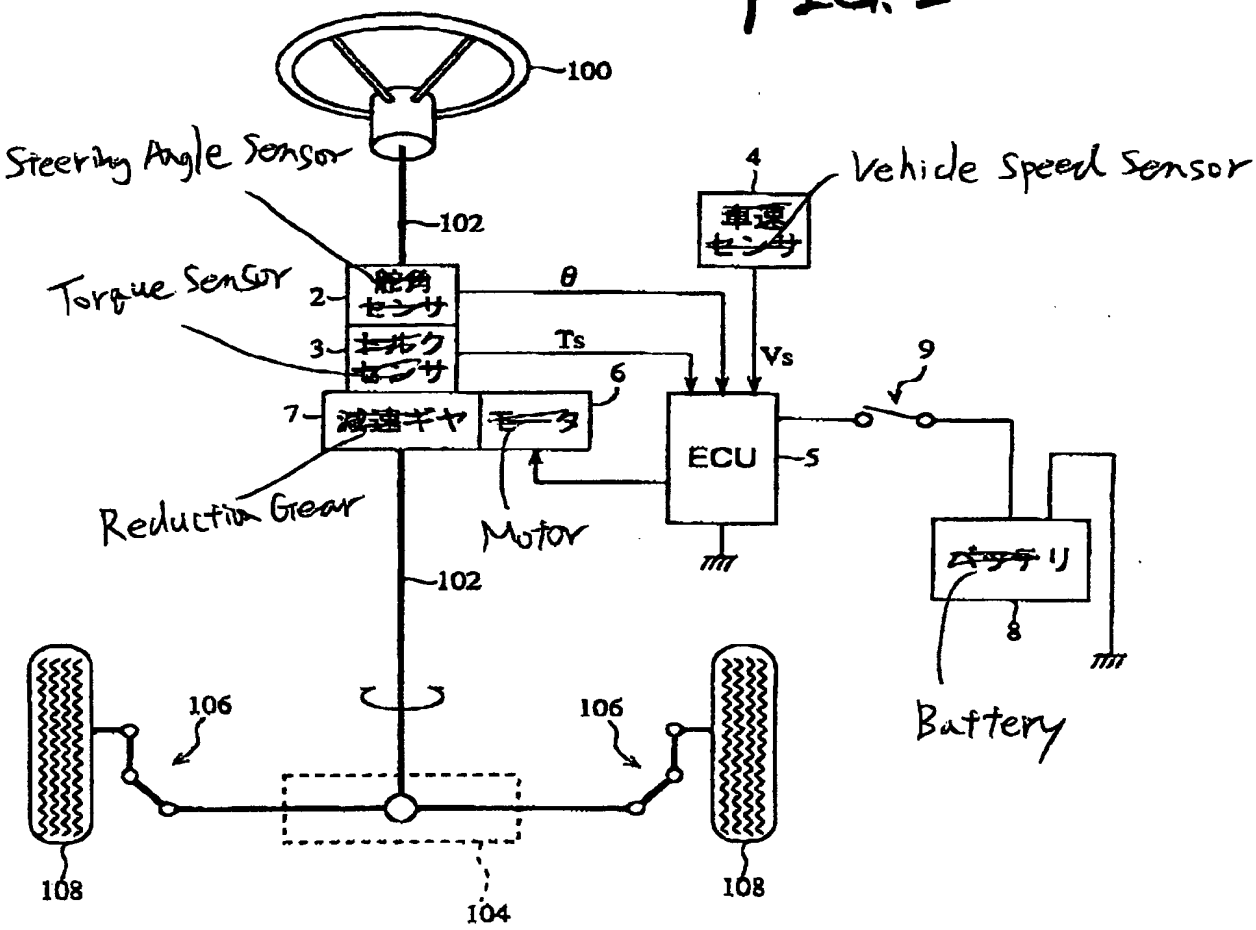
FIG. 1


100
Steering Angle Sensor
102
4
Vehicle Speed Sensor
車速センサ
Torque Sensor
2
舵角センサ
θ
3
トルクセンサ
Ts
Vs
9
6
7
減速ギヤ
モータ
ECU
5
Reduction Gear
Motor
102
バッテリ
8
Battery
106
106
108
104
108

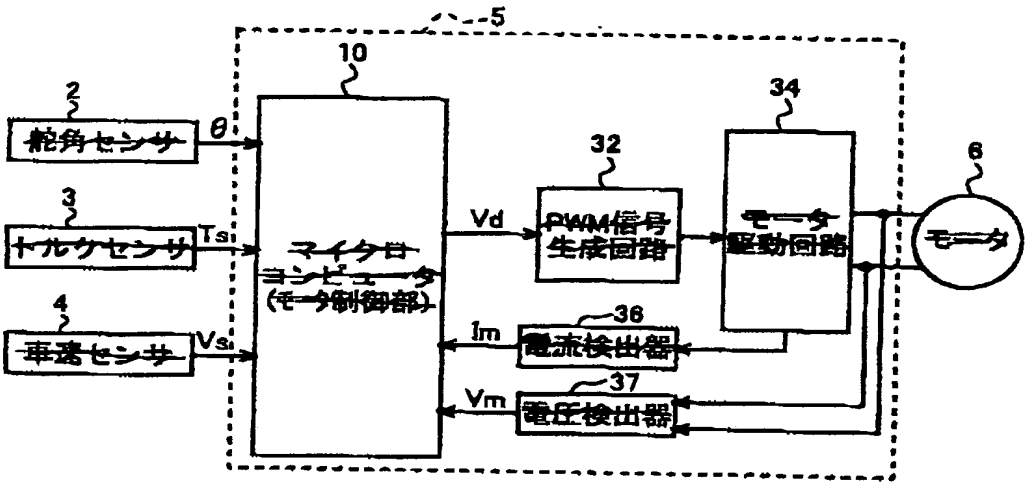


FIG. 2

2 Steering angle sensor

3 Torque sensor

4 Vehicle speed sensor

6 Motor

10 Microcomputer (Motor control section)

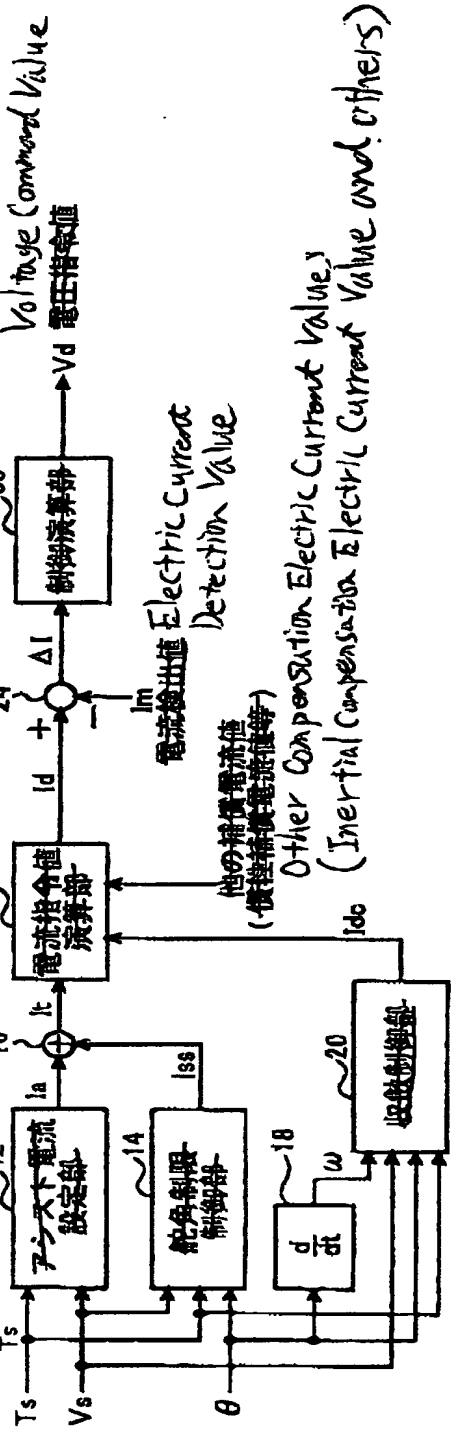
32 PWM signal generating circuit

34 Motor drive circuit

36 Electric current detector

37 Voltage detector

FIG. 3



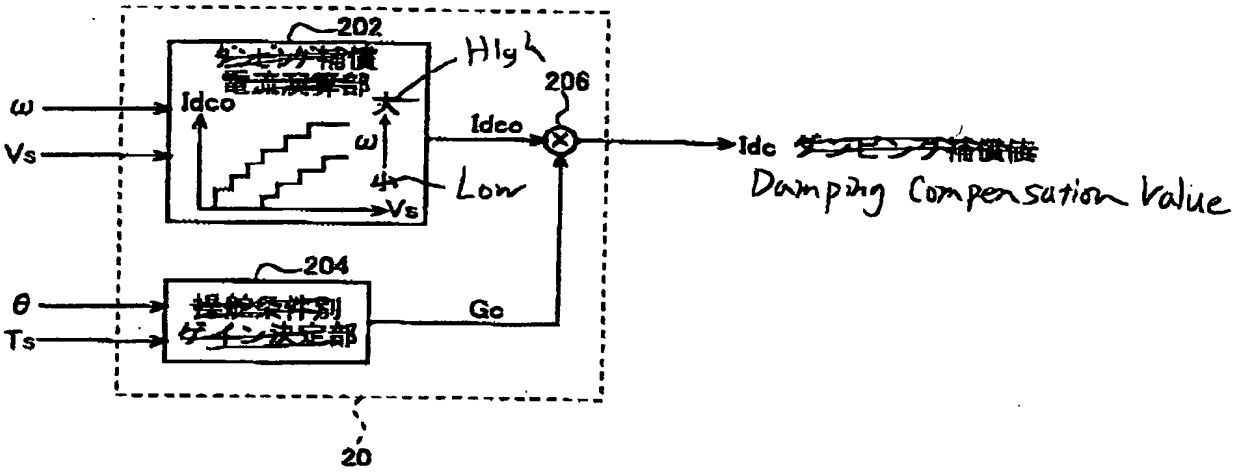
12 Assisting electric current setting section

14 Steering angle restricting control section

20 Convergence control section

22 Electric current command value calculating section

30 Control calculating section



202 Damping compensation electric current calculating section

204 Gain deciding section for each steering condition

FIG.4

Fig. 5A

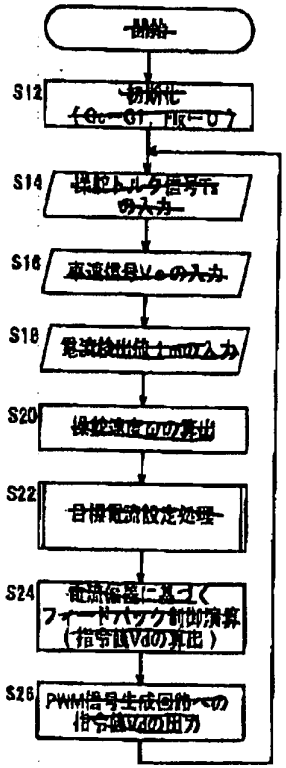


Fig. 5B

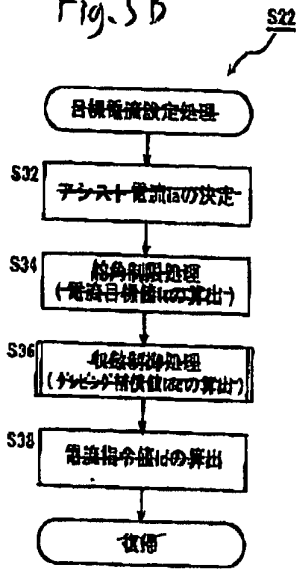


Fig. 5A

Start

S12 Initialization

(Gc ← G1, Flg ← 0)

S14 Input of steering torque signal Ts

S16 Input of vehicle speed signal Vs

S18 Input of electric current detecting value Im

S20 Calculation of steering speed ω

S22 Target electric current setting processing

S24 Feedback control calculation according to electric current deviation (Calculation of command value Vd)

S26 Output of command value Vd to PWM signal generating circuit

Fig. 5B

Target electric current setting processing

S32 Decision of assisting electric current Ia

S34 Steering angle restricting processing (Calculation of electric current target value It)

S36 Convergence control processing (Calculation of damping compensation value Idc)

S38 Calculation of electric current command value Id

Return

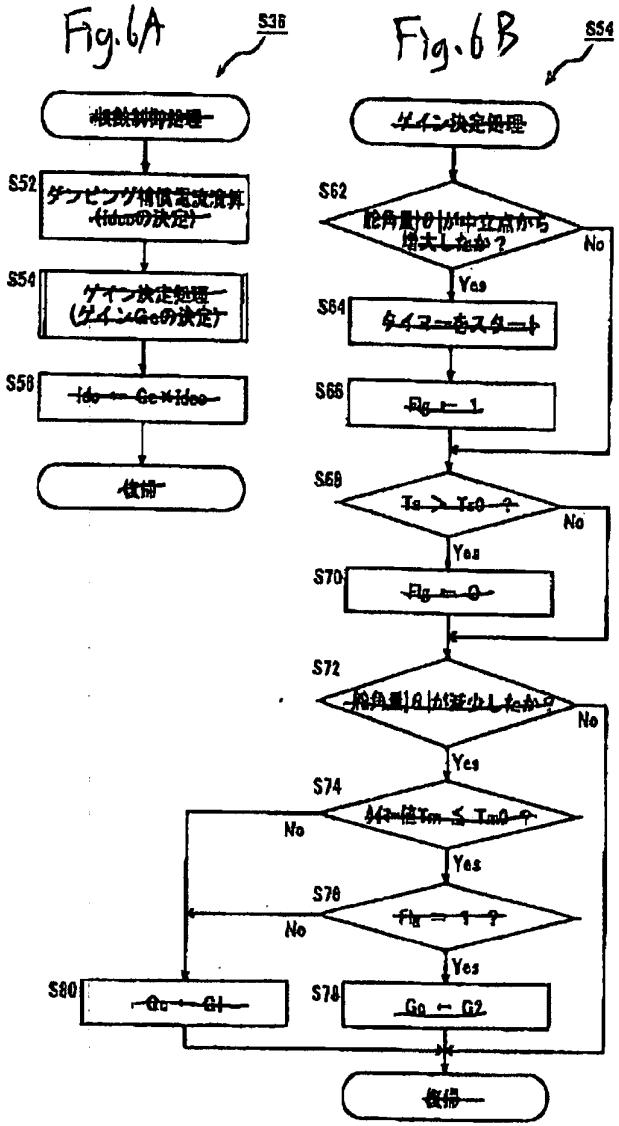


Fig. 6A

Convergence control processing

S52 Damping compensation electric current calculation (Decision of Idco)

S54 Gain deciding processing (Decision of gain Gc)

S56 Ids ← Gc × Idco

Return

Fig. 6B

Gain deciding processing

S62 Has steering angle quantity |θ| increased from neutral point?

S64 Start timer

S66 Flg ← 1

S68 Ts > Ts0?

S70 Flg ← 0

S72 Has steering angle quantity |θ| decreased?

S74 Timer value Tm ≤ Tm0?

S76 Flg = 1?

S78 Gc ← G2

S80 Gc ← G1

Return